

CLAIMS

What is claimed is:

1. An electronic device probe for probing an electronic device comprising:

a first space transformer having a first surface;

said first surface having a first plurality of contact locations;

a first plurality of elongated electrical conductors each having a protuberance at one end thereof;

said protuberance of each of said plurality of elongated conductors is bonded to one of said plurality of contact locations;

each of said plurality of elongated conductors extends outwardly away from said surface to form an array of elongated conductors;

said array of elongated conductors being embedded in a material; and

said elongated conductors having exposed probe tip ends at an exposed surface of said material.
2. An electronic device probe according to claim 1, further including a second space transformer in electrical connection with said first space transformer.
3. An electronic device probe according to claim 1, wherein said material is compliant.

4. An electronic device probe according to claim 1, wherein said material is rigid.
5. An electronic device probe according to claim 1, wherein said first space transformer has a second surface with a second plurality of contact locations; a second plurality of elongated conductors each in electrical communication with said second plurality of contact locations, each of said second plurality of elongated conductors extends away from said second surface.

16. An electronic device probe according to claim 1, wherein said first space transformer has a second surface with a second plurality of contact locations thereon and said second space transformer has a surface with a plurality of third contact thereon.

2. An electronic device probe according to claim 1, further including an electrical interconnection means for electrically interconnecting said second plurality of electrical contact locations to said third plurality of electrical contact locations.

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8. An electronic device probe according to claim 3, wherein said electrical interconnection means is a plurality of pins electrically connected to said second plurality of contact locations said pins are adapted for insertion into a socket which is electrically interconnected with said third plurality of contact locations.

~~4/~~ An electronic device probe according to claim ~~2/~~, wherein said electrical interconnection means comprises a body of elastomeric material having a

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fourth side and fifth side, a plurality of elongated conductors extending from said fourth side to said fifth side, each of said elongated conductors has a first end at said fourth side and a second end at said fifth side, said first ends are in electrical contact with said third plurality of contact locations and said second ends are in contact with said second plurality of contact locations.

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~~10~~. An electronic device probe according to claim ³~~4~~, further including a holding means for holding said first space transformer in a fixed spatial relationship with respect to said second space transformer.

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~~11~~. An electronic device probe according to claim ⁵~~4~~, wherein said holding means comprises an elongated member having a first end and second, said elongated member is fixedly attached to said second space transformer at said first end, there being a gripping means at said second end for gripping onto said first space transformer.

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12. An electronic device probe according to claim 1, further including a means for disposing said probe tip ends in electrical contact with contact locations on said electronic device.

13. An electronic device probe according to claim 1, wherein said elastomeric material has a depression surrounding at least one of said probe tip ends.

14. An electronic device probe according to claim 1, wherein said probe tip ends extend beyond said exposed surface of said elastomeric material.

15. An electronic device probe according to claim 1, wherein said probe is part of an electronic device test tool.

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16. An electronic device probe according to claim 10, further including a means for disposing said probe tip ends in electrical contact with contact locations on said electronic device.

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17. An electronic device probe according to claim 1, wherein said electronic device is selected from the group consisting of a semiconductor chip and a semiconductor chip packaging substrate and a semiconductor wafer.

18. An electronic device probe according to claim 1, wherein said protuberance is selected from the group consisting of a wire bond ball bond, a solder bump bond and a laser weld bond.

8. An electronic device probe according to claim 3, wherein said electrical interconnection means is an interposer between said first space transformer and said second space transformer.

20. An electronic device probe for probing an electronic device comprising:

a first space transformer having a surface;

said surface having a first plurality of contact locations;

a plurality of elongated electrical conductors each having a protuberance at one end thereof;

said each of said protuberance of each of said plurality of elongated conductors is bonded to one of said plurality of contact locations;

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each of said plurality of elongated conductors extends outwardly away from said surface to form an array of elongated conductors;

said array of elongated conductors being embedded in an elastomeric material;

~~said elongated~~ conductors being embedded in an elastomeric material;

a second space transformer in electrical connection with said first space transformer;

said first space transformer has a second surface with a second plurality of contact locations thereon and said second space transformer has a surface with a plurality of third contact thereon;

an electrical interconnection means for electrically interconnecting said second plurality of electrical contact locations to said third plurality of electrical contact locations;

a holding means for holding said first space transformer in a fixed spatial relationship with respect to said second space transformer; and

a means for disposing said probe tip ends in electrical contact with contact location on said electronic device.

21. An electronic device probe according to claim 20, wherein said holding means comprises an elongated member having a first end and second, said elongated member is fixedly attached to said second space transformer at said first end, there being a gripping means at said second end for gripping onto said first space transformer.

22. An electronic device probe according to claim 20, wherein said elastomeric material has a depression surrounding at least one of said probe tip ends.

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23. An electronic device probe according to claim 20, wherein said electrical interconnection means is an interposer between said first space transformer and said second space transformer.

24. An electronic device probe according to claim 1, wherein said electronic device is selected from the group consisting of an integrated circuit chip, a wafer of a plurality of integrated circuit chips and a circuitized substrate.

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25. An apparatus for testing or burning in an electronic device having contact locations comprising:

a layer of elastomeric material having a first side and a second side;

a plurality of elongated electrical conductors extending from said first side to said second side;

means for holding said layer;

means for disposing said layer adjacent said electronic device so that said elongated electrical conductors are in electrical contact with said contact locations.

26. An apparatus according to claim 25, further including means selected from the group consisting of or applying electric current to said electronic device,

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voltage to said electronic device, temperature to said electronic device and humidity to said electronic device.

method comprising:

providing an apparatus according to claim 1;

using said apparatus.

method comprising:

providing an apparatus according to claim 25 and testing said electronic device with said apparatus.

apparatus.

comprising:

providing an apparatus according to claims 26 and burning-in said electronic device with said apparatus.

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